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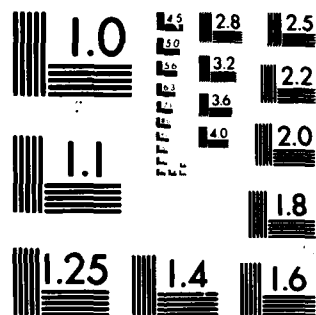UNCLASSIFIED VPI/SU-TM-79-2   AFOSR-TR-80-0280   NL

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LINE PRINTER SPOOLING ON AN ASCII TERMINAL

Richard J. Orgass

Technical Memorandum No. 79-2

April 12, 1979

AFOSR-79-0021

ABSTRACT

A program to simulate an upper and lower case line
printer on an ASCII terminal with a line length of at least
132 characters is described. The program assumes that the
usual Fortran carriage control tape is mounted in the line
printer. Carriage control for top of form (1) and skip one
line (0) are supported but overprinting is not supported.
The program is useful when a line printer is not available
or when an upper and lower case line printer is needed and
only an upper case lineprinter is available. Potential
users are warned that it takes a very long time to print a
listing at 300 baud.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
A program to simulate an upper and lower case line printer on an ASCII terminal with a line length of at least 132 characters is described. The program assumes that the usual Fortran carriage control tape is mounted in the line printer. Carriage control for top of form (1) and skip one line (0) are supported but overprinting is not supported. The program is useful when a line printer is not available or when an upper and lower case line printer is needed and only an upper case lineprinter is available. Potential users are warned that it takes a very long time to print a listing at 300 baud.

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Outline

This memorandum begins with a number of definitions that are needed to understand the description of the program. Following the definitions, there is a functional description of the program. The next section provides directions for using the program and the last section gives directions for accessing the program.

Physical Page Size

The depth of a page is the distance from the top of the paper on which output is to be printed to the bottom of the piece of paper. This distance is usually measured in inches. For example, the usual depth of a piece of typing paper is eleven inches. Currently, computer forms are available in two depths: 8.5 inches and 11 inches; the commonly used depth is 8.5 inches.

In this memorandum, the depth of a computer form is measured in lines rather than inches. If the device that you are using to produce a listing prints 6 lines per inch, the depth of an 8.5 inch form is 52 lines and the depth of an 11 inch form is 66 lines.

In this memorandum, the width of a piece of paper is the distance from the left edge of the first character that can be printed on a line to the right edge of the rightmost character that may be printed on a line. Computer forms are commonly provided with a page width of 8.5 inches and 14 inches. If you are using computer forms that are 8.5 inches wide and your printing device prints 10 characters per inch, the physical width of a line is 85 characters and the width of a 14 inch form is 140 characters.

The above statements describe the physical dimensions of computer forms both in inches and in characters for the most commonly used terminals. Hereafter, the physical dimensions of a page refer to these distances; this is in contrast to the following logical page dimensions.

Logical Page Dimensions

A listing file that is to be printed on a line printer or a terminal is formatted with certain assumptions about the width and depth of the page on which it is to be printed. That is, the program which generates a listing file assumes that the pages on which it is to be printed have certain dimensions (measured either in lines and characters or inches).

For example, most compilers assume that the depth of output pages is 66 lines and that the width of a page is 132 characters. [Some readers may wish to note that the width of listing files appears to be 133 characters. This allows for a printed line of 132 characters with a leading carriage control character.]

The assumptions about the dimensions of the output pages that were made by the program that generated the listing file are called the logical page dimensions: the logical width of a page and the logical depth of the page.

Functional Description

The program described here maps the logical output pages produced for printing on a line printer onto physical pages using a terminal to print the text on paper. This mapping is performed by printing the first logical line of a page at the top of a physical page. Successive output lines are printed continuously until the logical end of a page is reached. This requires more than one physical page if the logical page depth is greater than the physical page depth. At the logical end of a page, the paper is spaced to the top of the next physical page and then the next page of output is printed beginning at the top of the next physical page. This is repeated for each logical page in the listing file.

It is assumed that output files to be printed have the CMS file type LISTING and that column 1 has only carriage control characters. The character in column 1 is treated as follows: (1) If the character in column 1 is a "1", then the line beginning with this character is the first line of a logical page and the line is to begin a new physical page. (2) If the character in column 1 is a "0", then the line beginning with this character is to be printed after a blank line. All other characters in column 1 are ignored and do not appear on the listing.

Note that the import of this definition is that each line that begins with the character "1" in column 1 begins on the top of a new physical page as well as a logical page.

Directions

The directions for using this program include example terminal transcripts. In these transcripts, the terminal prompt from CMS is the period (.) and the terminal prompt from a running program is the asterisk (*). Lines beginning with these characters were entered by a user.

Before using this program for the first time, it is necessary to gain access to the necessary files. This information is provided in the next section.

All files that are to be listed must be of file type LISTING; it is not necessary to provide the file type. Further, it is assumed that all files to be printed are on the A disk or on a read only extension of the A disk.

In these directions, it is assumed that the following files are to be listed:

```
            MUMBLE LISTING A
            FUMBLE LISTING A
            MYPROG LISTING A
```

The first step is to issue the CMS command TPRINT. The terminal transcript looks like this:

```
            .TPRINT
            EXECUTION BEGINS ...

            Physical Page Depth:
            *
```

At this point, you should give the physical page depth of the forms mounted in the terminal in lines. If you are using forms with a physical page depth of 8.5 inches and your terminal prints six lines per inch (a DECwriter II has this property), you may simply answer with a carriage return; the appropriate value will be provided.

The program will then prompt for the names of the files to be printed. Enter as many file names as you wish, separated by commas. The file names must be in upper case letters! The input line may not contain blanks and must be at most 80 characters long. After this line of input is entered, the program will ask you to align the device and then enter return. Here is an example transcript:

```
                Input File(s):
         --     *MUMBLE,FUMBLE,MYPROG


                Please align the device, then enter return.
                #
```

When this instruction is typed on the terminal, you should
position the paper in the terminal so that the next line to be
printed (after your carriage return) will be printed on the top
line of the next piece of paper. When you have positioned the
paper, enter return.

After this, the files MUMBLE LISTING, FUMBLE LISTING and MYP-
ROG LISTING will be printed at the terminal as described above.
There is nothing else to do except watch the terminal to catch
paper jams, etc.

Once all of the files have been printed, the paper will be
advanced to the top of the next page and the program will prompt
for additional input files:

```
                Input File(s):
                #
```

If you wish to print additional files, enter the file names as
described above.   If you have no additional files to print, sim-
ply enter return. The program will respond in this way:

```
                End of output.


                    .
```

The prompt of a period indicates that you are again speaking
to CMS at monitor level.

Gaining Access to the Program

The files for this program are located on the A disk of userid
ORGASS. For reasons that are unknown to the author, it is neces-
sary to load the program in a virtual machine whose memory is the
same size as the memory of the virtual machine on which it is
executed and, therefore, the program is stored as relocatable
files rather than as a module.

The easiest way to gain access to the program is to create an
exec file named TPRINT EXEC on your A disk.   The text of this
exec file should be as follows:

```
CP LINK ORGASS 191 333 VPI
CP ACCESS 333 G/A
CP TERM LINES 255
GLOBAL TEXTLIB SIMLIB
LOAD SIMRTS TPRINT (NOMAP
START SIMRTS (NOTEST LINECNT 60 SYMBDUMP 0 DUMP 0
```

Once this exec file is created, you can use the program as described above.

A second way to access the program is to type the following 3 lines as CMS commands:

```
LINK ORGASS 191 333 VPI
ACCESS 333 G/A
GLOBAL TEXTLIB SIMLIB
```

After these commands have been typed, you can use TPRINT as described above. These commands must be typed only once in a single session to gain access to the program.

The first approach is simpler if you are planning to use the program at widely spaced intervals because it isn't necessary to remember any directions. Simply type the command TPRINT and the program prompts for the remaining input.

Questions or Comments

If you have questions about the use of the program or suggestions for improving the program, please send them via CMS mail to userid ORGASS. Your message will be answered in a day or two at most.

If you prefer to use the US Mail, send letters to the author at the above address.

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